

# PATENT ABSTRACTS OF JAPAN

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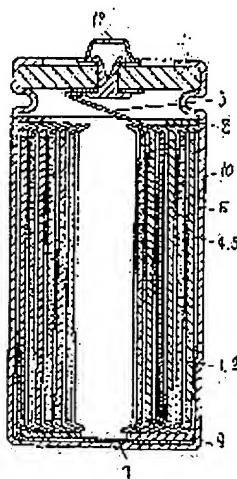
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(54) NONAQUEOUS-ELECTROLYTE SECONDARY BATTERY

(57)Abstract:

PURPOSE: To obtain a battery maintaining high energy density and having improved cycle characteristic and little self-discharge and capacity deterioration after storage by using a specific positive electrode material.



CONSTITUTION: A secondary battery is constituted of a positive electrode mix 1, a lithium metal 4 and a separator 6 and the like. The positive electrode material is a lithium composite oxide expressed by a chemical formula  $\text{LiMO}_z$  ( $1.9 < z < 2.1$ ), part of lithium is substituted with an alkaline earth metal, and M is one or more among cobalt, iron and nickel. When this positive electrode material is used, the

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alkaline earth metal exists in the crystal lattice even if lithium ions are removed by 0.4 electron/metal or above during charging, thus the stable crystal lattice is formed. The cycle deterioration ratio is small in the charge/discharge cycle, and the self-discharge and capacity deterioration after high-temperature storage in the charged state are reduced.